

What is claimed is:

1. A method for making a data call from a host to a destination over a network, comprising the steps of:

5 sending a setup message including a holding time of said data call from the host to a switch connected to said network;

responsive to said setup message, determining at said switch if a channel is available from a plurality of channels and when said channel is available for making said data call from
10 said host to said destination;

responsive to said channel being available, said switch sending a success message to said host identifying said available channel and a start time for making said data call;

15 responsive to receiving said success message, said host making said data call to said destination via said available channel at said starting time.

2. The method of claim 1 wherein said data call is a call which transfers a file of data of known length.

20 3. The method of claim 2 wherein said holding time is equivalent to a time to transfer said file of data of known length at a first rate.

4. The method of claim 3 wherein said network said data call is made over includes a SONET portion.

25 5. The method of claim 3 wherein said network said data call is made over includes an Internet Protocol portion.

6. The method of claim 3 wherein said network said data call is made over includes SONET and Internet Protocol sub-networks.

7. The method of claim 3 wherein said network said data call is made over includes a virtual circuit ATM portion.

30 8. A method for making a data call having a holding time from a host to a destination over a network having a plurality of switches, comprising the steps of:

sending a setup message from the host to a first switch of said plurality of switches of said network requesting a channel to said destination for a data call having said holding time;

determining from said setup message and local information at said first switch if a channel of a plurality of channels is available through said first switch to a subsequent switch of said plurality of switches and what times each available channel is available to make said data call;

5 sending a subsequent setup message including the available channels and the available times for said channels for said data call to a subsequent switch of said plurality of switches;

determining from said subsequent setup message and local information at said subsequent switch if a channel of a plurality of channels is available through said first switch and said subsequent switch and what times each available channel is available to make said data call;

10 sending another setup message including the available channels and the available times for said channels for said data call of said first and subsequent switches to a terminating switch of said plurality of switches that is connected to said destination;

determining from said another setup message and local information at said terminating switch if a channel of a plurality of channels is available through said first and subsequent switches and what times each available channel is available to make said data call; and

15 if a channel is available for said holding time of said data call through all switches between host and destination sending a success message identifying the available channel and the available time to make said data call.

20 9. The method of claim 8, wherein in response to said success message each switch along the available channel reserves the channel and the time for said data call as determined by said terminating switch.

10. The method of claim 9, wherein said time for said data call was the earliest possible starting time for a successful data call having said holding time from host to destination.

25 11. The method of claim 9, wherein said host makes said data call on the channel and at the time of the success message.

12. The method of claim 11, wherein said time for said data call was the earliest possible starting time for a successful data call from host to destination.

30 13. The method of claim 8, wherein said time for said data call was the earliest possible starting time for a successful data call from host to destination.

14. The method of claim 8, wherein said determining steps were made using an F method.

15. The method of claim 8, wherein said determining steps were made using a timeslots method.

16. The method of claim 8, wherein said determining steps were made using a kT_{wait} method.

5 17. The method of claim 8 wherein the subsequent switch and the terminating switch are the same switch.

18. An apparatus for completing a data call with a holding time from a host to a destination over a network having a plurality of switches, comprising:

10 a first switch of said plurality of switches connected to said host and having means for receiving a setup message from said host for setting up a channel to said destination for a data call having said holding time;

15 said first switch having means for determining from said setup message and local information of said first switch if a channel of a plurality of channels is available through said first switch to a subsequent switch of said plurality of switches and what times each available channel is available to make said data call in response to receiving said setup message;

20 said first switch also having means for sending a subsequent setup message including the available channels and the available times for said channels for said data call to a subsequent switch of said plurality of switches between said host and said destination;

25 said subsequent switch having means for determining from said subsequent setup message and local information of said subsequent switch if a channel of a plurality of channels is available through said first switch and said subsequent switch and what times each available channel is available to make said data call;

30 said subsequent switch also having means for sending another setup message including the available channels and the available times for said channels for said data call of said first and subsequent switches to a terminating switch of said plurality of switches that is connected to said destination responsive to said subsequent switch determining means;

35 said terminating switch having means for determining from said another setup message and local information of said terminating switch if a channel of a plurality of channels is available through said first and subsequent switches and what times each available channel is available to make said data call to said destination; and

if a channel is available for said data call for the holding time thereof through the switches between said host and said destination, said terminating switch having means for

sending a success message identifying the channel and the time when said channel is available to make said data call to said host.

19. The apparatus of claim 18 wherein the subsequent switch and the terminating switch are the same switch.

20. The apparatus of claim 18, wherein said setup message includes said holding time at a first data first rate.

21. The apparatus of claim 20 wherein said channel availability determining includes using said file transfer time at said first rate.

22. A method for transferring a file from a host to a destination over a network, comprising the steps of:

15 sending a setup message including a holding time from the host to an ingress switch; determining at said ingress switch if a channel is available for transferring said file to said destination;

20 in response to successfully finding an available channel at said ingress switch, sending a subsequent setup message to a subsequent switch; determining at said subsequent switch if a channel is available for transferring said file to said destination;

25 in response to successfully finding an available channel at said subsequent switch, sending a subsequent setup message to said destination switch; in response to said subsequent setup message, said destination switch determining an available channel between said destination switch and said destination;

30 sending a success message to said host through every switch therebetween, said success message having an start time and an ending time; and

in response to said success message, each switch reserving said channel for said time; and

in response to said success message, said host transferring said file at said time via said channel.

23. The method of claim 22, wherein said destination switch determines that said success message has sufficient time to propagate back to the host.

24. The method of claim 22, wherein said start time is an earliest possible start time.

25. The method of claim 24, wherein said setup requests traverse said network with each subsequent switch determining a value for said earliest possible start time by looking for a largest time period at most equal to a predetermined constant F but at least equal to said holding time.

5 26. The method of claim 24, wherein if found, said channel is reserved for this file transfer.

27. The method of claim 26, wherein if a channel is not found said transfer is blocked and release procedures for all switches involved are initiated.

10 28. The method of claim 22, wherein said ingress switch selects a number of time ranges during which a channel is available for said data call.

29. The method of claim 22 wherein instead of one subsequent switch there are multiple switches between said ingress switch and said destination switch.

15 30. The method of claim 22, wherein at each of said switches, said channel is reserved in a staggered relationship such that said channel is reserved only for a time that said file propagates through.

31. The method of claim 22, wherein initiation of said data call is by a timer.

32. The method of claim 22, wherein initiation of said data call is by a timer and release of said data call is by a timer.